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ABSTRACT

This document contains the following papers on the young child from the SITE (Society for Information Technology & Teacher Education) 2001 conference: (1) "Young Children and Technology: Building Computer Literacy" (Michael J. Bell and Caroline M. Crawford); (2) "Integrating Technology into the Young Child Lesson Plan" (Michael J. Bell and Caroline M. Crawford); (3) "Computer Science for Children" (Claudia Santos Fernandes and Paulo Fernando Blauth Menezes); (4) "Technology and Character Education of the Younger Generation" (Shujia He and Yuehua Zhang); (5) "Technology in Early Childhood: A Model for Teacher Training" (Patricia E. Ragan, Arthur Lacey, and Theodor Korithoski); and (6) "Lights, Camera, Action: Videoconferencing in Kindergarten" (Nancy Yost). Most papers contain references. (MES)

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ED 457 846

YOUNG CHILD

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Last year there was a great deal of press discussion around a report produced by the Alliance for Childhood entitled *Fool's gold: A critical look at computers in childhood.* The report was critical of the amount of funding spent on introducing and consolidating the use of computers and other media in early childhood classrooms, when, in their view, the funds should have been diverted to maintain the traditional format of early childhood curricula. In particular, the authors of the report claimed that "... the benefits of computers for preschool and elementary school children were being vastly overstated." And that "... the costs - in terms of money spent, loss of creative, hands-on educational opportunities, and damage to children's physical and emotional health - were not being accurately reported." (Alliance for Childhood, 2000, p.1)

Some contradictions in their findings cause us to question the Alliance's conclusions. First, the authors contended that those who supported the use of computers by young children had a vested interest in marketing the machines while at the same time the Alliance has strong ties to Waldorf education, a pedagogical approach which focuses on sensory motor learning and regularly does not teach reading systematically until children are in the 3rd or 4th grades of school.

The second contradiction concerns their either faith or lack of faith in research concerning curricular tools. The Alliance criticized the lack of research to support claims that computers can enhance early childhood learning contexts and cited research where it specifically did not (classrooms in which drill and practice software were blamed for poor test results in the basic skills). This was somewhat ironic since at the same time they made contentious claims expressing their own viewpoint which were not supported by any research at all. Near the end of the report they stated "... there is absolutely no evidence that a lack of computer technology in elementary school poses any threat at all to a child's development." (p. 87) Yet many of the tools of the early childhood curriculum they support, have no foundation in research. Certainly, there are no studies *either* which examine the effect that lack of jigsaws, blocks or collage pose to a child's development - which serve to indicate the futility of asking such questions.

To be sure, there are uses of technology which are not effective or appropriate, but same is true of any curricular material. So it is important to know *how* to use the curricular material. In addition, there is a lot of low quality software on the market which doesn't afford many opportunities for learning. Even so, this fact cannot justify the condemnation of *all* software.

Thirdly, though the Alliance attacks the misallocation of funds toward the use of technology, the paltry amount given toward early childhood cannot be compared with the general misallocation of society's resources in America. How many citizens question the amount of foreign aid allocations, or the billions of dollars spent on fighter aircraft or missiles, to the detriment of American children who are homeless, have poor nutrition and whose schools are devoid of adequate funds. Certainly, in American society which according to the The State of America's Children (Edelman, 2000) is number one in medical technology yet one in six have no health insurance; number one in millionaires yet 20% of children are poor and at risk of malnutrition; number one in military yet over 80,000 children have been killed by guns since 1979; any attack on the misallocation of funds must be examined in the context of incredible misallocations national resources.

The publicity that the report received was considerable and worrying. Each year those teacher educators who prepare students to become early childhood professionals come to SITE to discover ways in which they might extend and improve their practice in order to ensure that teachers of the 21st century are confident and competent in the use of instructional technology. In this way children in our classes are provided with opportunities to become effective learners in *new and dynamic* ways. We believe that the use of instructional technology enhances teaching and learning opportunities for young children and can cite research to support our viewpoints, including our own.

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This year, the presentations in this section all review and consider important issues related to the use of instructional technology by teachers and learners.

The paper by Ragan considers the ways in which the use of computers is appropriate in a pre school environment and highlights what knowledge teachers of young children need in order to design environments that are characterized by the appropriate use of computers when necessary. The notion of competency in terms of technological fluency is an integral part of this discussion as well as the clear articulation of what knowledge and skills are needed for exemplary teaching and learning with instructional technology.

Bell and Crawford ask us to consider levels of comfort with technology for preservice students, since they contend that confidence and competence with technological devices, and the ways in which they may be integrated into teaching and learning contexts is an important pedagogical skill for the information age. They suggest that computer literacy is only developed in supportive environments when both children and teachers are afforded with opportunities to explore and problem solve in versatile ways. They continue the dialog in their second paper by considering the use of technologies in a variety of different educational contexts such as museums, after school programs and learning centers. Bell and Crawford contend that when children are given autonomy and control over their learning in interactive displays they are more likely to return to engage with it and other displays. They suggest that such contexts for learning with technology provide exemplars for learning in diverse environments and should inform they ways in which we organise teacher education courses that are related to curriculum applications both in school and in out of school contexts.

Next, Christina Han examines the attitude of principals to the use of instructional technology by young children. Principals are key people in terms of the provision and support of computers in schools and Han discusses the results of her survey with principals in Hong Kong which elucidate the key features of computer use in their schools.

He and Zhang provide a variety of examples of interactive learning contexts for teachers. They contend that the use of instructional technology with students can enhance their attitude to learning in a positive way and that this has a beneficial effect on the education process. Their results indicate that the use of instructional technology can assist in raising students' abilities in abstract thinking, analysis and synthesis of ideas and when practiced in a context of exploration can yield additional benefits associated with becoming autonomous learners.

Nancy Yost explores the use of videoconferencing with kindergarten aged children. Her project involved two classes who became involved in a weather project. The two teachers included a range of technologies for the successful sharing of ideas and communication and the paper discusses the issues and outcomes of the interesting project.

References

Alliance for Childhood (2000). Fool's Gold: A Critical Look at Computers in Childhood. College Park, MD: Alliance for Childhood. Also available at: http://www.allianceforchildhood.net/projects/computers/computers_reports.htm

Edelman, M. W. (2000). The State of America's Children. Washington, DC: Children's Defense Fund.

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Young Children and Technology: Building Computer Literacy

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Abstract: Building upon the young child's prior knowledge and developmental level, computer literacy must be addressed early in each child's educational career. A comfort level or disposition is important to develop for both young children and as well as early childhood teachers, which is why the importance of instructional technology is stressed within the pre-service teacher's educational experience.

Preservice Teacher Preparation

Pre-service teachers focus an immense amount of time on the classroom experience, as well they should. The learning opportunities associated with real-world, student-centered classroom environments should be strongly emphasized during the methodological design and development of the preservice teacher's training. Individuals preparing to be early childhood teachers, generally are offered a wide variety of experiences working with young children. These experiences range from simple observation in pre-primary and primary grade classrooms to taking full responsibility for successful, authentic learning experiences for young children during the final stages of their preparation. Students experience tutoring individual children in content-oriented skills, facilitating learning experiences for young children in small groups, as well as planning and implementing educational activities for as many as two dozen young learners in self-contained classroom. Significant challenges arise for these pre-service teachers. Planning lessons and managing relatively large groups of young, dynamic learners, aligning authentic educational experiences with mandated objectives, and promoting application of skills and knowledge in relevant ways for the purposes of student assessment are just a few of the major concerns.

Pre-service teachers should develop dispositions that they are decision makers and have a genuine part in developmentally appropriate classroom activities. Integrating technology into the pre-service teacher's training must occur so that they will have developed a well-rounded set of skills when taking responsibility for their own classroom. The support of the early childhood and instructional technology faculty members offer the preservice teachers a supportive environment through which to design, develop, discuss and revise a lesson plan. Such a learning experience offers the preservice teacher the opportunity to think through the real-world process of integrating instructional technologies in appropriate and successful manners.

Integrating Technology

In the last fifteen years, early childhood teacher educators have moved from wary speculation of the appropriateness of instructional technology in pre-primary and primary grade classrooms to a greater understanding of the operations and integration of technologies into daily classroom practices (Anselmo & Zinck, 1987). With current public interest in effective early childhood instruction at a high level, it is appropriate to prepare the next generation of teachers to use technologies with young children. Currently, pre-service teachers bring varied experiences with technologies to their course work and experiences. Yet, the trend toward heighten awareness and positive dispositions toward technologies among pre-service teachers is apparent.

Planning and Implementation

The opportunity to develop an understanding of the early childhood classroom environment adds to the preservice teacher's conceptual framework, which in turn aids the preservice teacher in further developing a repertoire of skills that offer opportunities towards the integration of technology. The integration of technology into the young child's learning environment offers experiences that may not otherwise be available, and supportive environments offered by the early childhood and instructional technology faculty members aid the preservice teachers in further developing the necessary skills associated with a superior repertoire of experiences.

Pre-service early childhood teachers should be encouraged to view instructional technology as not simply a means of delivery of learning experiences, but a means for young children to represent their understandings and to creatively express their interpretations of the world. (Charlesworth, 1997) It has long been held among early childhood educators that children should learn through "hands-on" instruction of three-dimensional materials. Integrating technologies with those fundamental "hands-on" experiences should be evident in lesson planning. This blend of experiences should nurture individual learning styles, promote autonomy in young learners and to augment typical classroom assessment strategies.

Interpreting the scope and sequence of early childhood curriculum in relation to individual child development will compel pre-service teachers to balance expectations with individual learning needs, as well as the context of the community. Clearly, effective early childhood education does not take place in a social or cultural vacuum. Lesson plans that are developmentally appropriate will reflect an understanding of instructional expectations, child development and community. (Lubeck, 1998) Does the use of instructional technologies in early childhood classroom influence this delicate and ever-changing balance? Using computers or other interactive technologies with young children will not fundamentally change effective classroom practices. Teachers that consistently and creatively use technologies, model a disposition toward new learning contexts, methods and information. Young children will interpret these experiences and develop their own understandings and dispositions toward instructional technologies. If a climate of acceptance is fostered in early childhood classrooms and is evident in pre-service teachers' dispositions, lesson planning and daily implementation, then young children will be influenced by these authentic and meaningful experiences. Ultimately, pre-service teachers should view instructional technologies as a means of fostering a sense of independent practice, collaborative learning relationships among peers and empowering our youngest learners to independently interact with various media and gain new understandings.

Summary

The components of appropriate and effective early childhood classrooms must now include emerging technologies specifically for young children. Also, the definition of the early childhood classroom teacher as "nurturer-facilitator" will be altered as children gain independence and a broadening worldview through their experiences with technologies. Lesson planning for developmentally appropriate classrooms will assuredly become more complex in the coming years, yet the opportunity awaits for more dynamic classroom experiences for young children, growing autonomy for young individuals, and expanding the horizons of information for young children will yield notable benefits for students, as well as professional satisfaction for those teachers that develop well-planned learning activities.

References

Anselmo, S. & Zinck, R.A. (1987). Computers for young children? Perhaps. *Young Children. 42*(3), 22-27.

Charlesworth, R. (1997). Mathematics in the developmentally appropriate integrated curriculum. In C.H. Hart, D.C. Burts, and R. Charleworth (Eds.), *Integrated curriculum and developmentally appropriate practice: Birth to age eight.* Albany, NY: SUNY Press.

Lubeck, S. (1998). Is developmentally appropriate practice for everyone? *Childhood Education.* 74(5), 283-292.

Integrating Technology into the Young Child Lesson Plan

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Abstract: The support of the early childhood and instructional technology faculty members offer the teacher candidates a supportive environment through which to design, develop, discuss and revise a lesson plan. Such a learning experience offers the teacher candidate the opportunity to think through the real-world process of integrating instructional technologies in appropriate and successful student-centered manners.

Introduction

The integration of technology within the young child educational environment can present significant levels of difficulty for teacher candidates, as well as master teachers with numerous years of experience. The conceptual framework pertaining to the appropriate and successful implementation and successful, appropriate integration of technology within a learning environment can grow exponentially when the teachers integrating technology have a nurturing, supportive environment available through which to think through such a difficult task. Further, the support of university faculty and instructional designers adept at the appropriate and successful implementation of technology lends an environment wherein the educator can develop a level of comfort with the technology while developing the skills and conceptual framework necessary to integrate technology into a lesson plan. An environment that emphasizes a nurturing, supportive environment for the educator will also maintain such an environment when the implementation of technology reinvents itself within the young child learning environment. The modeling associated with instructional technology within a learning environment is of utmost necessity.

Teacher Candidates and the Young Child

Teacher candidates focus an immense amount of time on the classroom experience, as well they should. The learning opportunities associated with real world, student-centered classroom environments should be strongly emphasized during the methodological design and development of the preservice teacher's training. Students experience tutoring individual children in content-oriented skills, facilitating learning experiences for young children in small groups, as well as planning and implementing educational activities for as many as two dozen young learners in self-contained classroom. Significant challenges arise for these teacher candidates. Planning lessons and managing relatively large groups of young, dynamic learners, aligning authentic educational experiences with mandated objectives, and promoting application of skills and knowledge in relevant ways for the purposes of student assessment are just a few of the major concerns.

Instructional Technology

Teacher candidates should develop dispositions that they are decision makers and have a genuine part in developmentally appropriate classroom activities. Integrating technology into the teacher candidate's training, more specifically supporting the appropriate instructional design associated with designing a lesson plan, must occur so that they will have developed a well-rounded set of skills when taking responsibility for their own classroom. A significant opportunity may be realized through the integration of technology into lesson planning for early childhood classrooms. The support of the early childhood and instructional technology faculty members offer the preservice teachers a supportive environment through which to design, develop, discuss and revise a lesson plan. Such a learning experience offers the preservice teacher the opportunity to think through the real-world process of integrating instructional technologies in appropriate and successful manners.

In the last fifteen years, early childhood teacher educators have moved from wary speculation of the appropriateness of instructional technology in pre-primary and primary grade classrooms to a greater understanding of the operations and integration of technologies into daily classroom practices (Anselmo & Zinck, 1987). With current public interest in effective early childhood instruction at a high level, it is appropriate to prepare the next generation of teachers to use technologies with young children. Currently, teacher candidates bring varied experiences with technologies to their course work and experiences. Yet, the trend toward heightened awareness and positive dispositions toward technologies among teacher candidates is apparent.

Planning and Implementation

Where in the milieu of teacher education courses does the early childhood preservice teacher have the opportunity to integrate technology in an appropriate and successful manner? Of course, the requisite instructional technology course is emphasized as a core requirement, but what of the integration of instructional technology within the learning environment? The focus of learner-centered educational environments must be emphasized, and the technology must be integrated in an appropriate and successful manner. The opportunity to develop an understanding of the early childhood classroom environment adds to the preservice teacher's conceptual framework, which in turn aids the preservice teacher in further developing a repertoire of skills that offer opportunities towards the integration of technology.

Pre-service early childhood teachers should be encouraged to view instructional technology as not simply a means of delivery of learning experiences, but a means for young children to represent their understandings and to creatively express their interpretations of the world. (Charlesworth, 1997) It has long been held among early childhood educators that children should learn through "hands-on" instruction of three-dimensional materials. Integrating technologies with those fundamental "hands-on" experiences should be evident in lesson planning. This blend of experiences should nurture individual learning styles, promote autonomy in young learners and to augment typical classroom assessment strategies.

Conclusions

Issues surrounding pre-service teacher training, creating understandings of the importance of comprehensive lesson plans for early childhood classrooms and implementation of those plans in effective and developmental classroom settings abound. The components of appropriate and effective early childhood classrooms must now include emerging technologies specifically for young children. Also, the definition of the early childhood classroom teacher as "nurturer-facilitator" will be altered as children gain independence and a broadening worldview through their experiences with technologies. Lesson planning will assuredly become more complex in the coming years, yet the opportunity awaits for more dynamic classroom experiences for young children, growing autonomy for young individuals, and expanding the horizons of information for young children will yield notable benefits for students, as well as professional satisfaction for those teachers that develop well-planned learning activities.

References

Anselmo, S. & Zinck, R.A. (1987). Computers for young children? Perhaps. *Young Children. 42*(3), 22-27.

Charlesworth, R. (1997). Mathematics in the developmentally appropriate integrated curriculum. In C.H. Hart, D.C. Burts, and R. Charleworth (Eds.), *Integrated curriculum and developmentally appropriate practice: Birth to age eight*. Albany, NY: SUNY Press.

Computer Science for Children

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Abstract: This work shows a propose of teaching computer science for children. It is intended that the "Information Technology Teaching" sharpens the critical sense and capacitate students to learn not only to use currents technologies, but to understand how it works. To find out which Computer Science Topics are more suitable to teach children, it was realized a quiz, answered by Computer Science and Information Technology teachers which thought disciplines. A solid basis to the practice of Computer Science has the objective to develop the demanded abilities to think, to express clearly and precisely, to answer problems and create concepts.

Introduction

Many efforts are being developed to use today's technologies into the teaching-learning process. These efforts are aimed at the use and classification of educational software products, distance communication techniques, the use of multimedia and virtual reality resources to aid teaching, and also in the construction of computer environments that could change the educational paradigm, though from all known papers up until know there is none focusing on the basic Computer Science concepts involved.

Between all the aspects involved during the learning process, the development of logical reasoning has fundamental importance, thus it is proposed that the teaching of fundamental concepts of Computer Science could enhance the basic school learning and develop today's demanded abilities.

This article is organized in three sections: the discussion of teaching concepts, the aspects of work in the teaching of computer science or children and the final conclusions.

Teaching Concepts

According with Menezes and Diverio (1999) the computer theory is very important to the Computer Science, because it gives a right theory support requested to a correct and great learning of the science involved on computers, creates the development of a logical and formal thinking, and also, introduces fundamental concepts that are developed in other areas.

To find out which Computer Science Topics are more suitable to teach children, (Fernandes and Menezes, 2000) it was realized a quiz, answered by Computer Science and Information Technology teachers which thought disciplines like: Software Engineering, Data Bases, Programming Languages, Math and General Systems Theory, in many public and private institutions of Brazil.

It was asked, independent of the application, to answer in an intuitive and objective way which are the basic fundaments of Computer Science. The identified concepts where separated and summed in relation to the quantities of answers.

From all the concepts cited, the top ones where: Algorithms, Programming, Formal Languages and Automatons, Computability, Complexity, Formalisms and Machines. It is noticed that those comprehend the basic formation in the Computer Science area.

It is intended that the "Information Technology Teaching" sharpens the critical sense and capacitate students to learn not only to use this technologies, but to understand how it works.

This vision is corroborated by many authors such as on (Esmin, 1999) and (Silveira, 1997) in which there is evidence that the traditional methods of teaching math bring the student to use most of the time to elaborate calculations as opposed to build concepts and develop abstract reasoning.

Therefore, as math does not teach how to manipulate a calculator, the teaching of Computer Science cannot be limited to be a training or to teach how to use a tool, like a specific text editor. Because if something changes in this type of editor this training must be restarted. Additionally as it does not fit in this context, the teaching of typing and shorthand writing.

Aspects of Work

After identified the fundamental concepts of computer science it is necessary to study how they will be introduced and how to approach them in conformity with the existing disciplines. We are studying on the history of education and how today's disciplines where introduced to the actual school curriculum for to be based

History is the understanding of the transformations made by men during time. Pedagogy is the art and the science of teaching, or the action of men when transmitting its knowledge. It is focused on the man in its whole and it is centered on the formation of thought. Thus Pedagogy in the teaching of Computer Science can help the formation of computational though, use other's science methods, and identify and eliminate learning obstacles. The path to the teaching of Computer Science must be worried on the solution of problems and must be centered on the student's experience to act in a specific knowledge domain.

Understand and study the history of computer is before all understand the evolution of mathematics. The result of building techniques that allowed us to calculate in the past, for example, area and tangent coincides with the technological development of mankind. Thus the first year of Computer Science must be based on the teaching of mathematics, for example: basic in logical math and conditional idea of Computer Science.

Conclusions

The data collected with the teachers on the institutions researched shows the basic requirements for Computer Science, what mainly comprehend the basic formation in the Computer Science area.

These concepts must be worked in a multidisciplinary matter, focused in mathematics. Thus, algorithms are used for development of calculus, logic´ notion, of theory of set etc.

The transformation of these concepts in useful applications is of fundamental importance, bringing motivation to children for the computer science´ study.

References

Boyer, C. B. (1991). *A History of Mathematics*. Broklin, New York: John Wiley & Sons.

Diverio, T. & Menezes, P. B. (1999). *Teoria da Computação: Máquinas Universais e Computabilidade*. Porto Alegre, RS: Sagra Luzzato.

Fernandes, C. S. & Menezes P. B. (2000). A Propose of Teaching Computer Science for Children. In: *International Conference on Engineering and Computer Education*. São Paulo.

Esmin, A. A. (1999). O que um Aluno de Ensino Médio deve Conhecer de Computação? Uma Proposta de Currículo. In: *Anais do XIX Congresso Nacional da Sociedade Brasileira de Computação*. (pp. 787-793). Rio de Janeiro, 1999.

Silveira F. A. & Costa A. C. (1997). O MATHEMATICA em uma experiência com Alunos de 2 Grau. In: *Anais do VIII Simpósio Brasileiro de Informática na Educação*. (pp. 849-842). São José dos Campos, 1997.

Technology and Character Education of the Younger Generation

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Abstract: This paper intends to provide a variety of examples for teachers to recognize the possibility of utilizing technology to create a student-centered interactive learning environment and to show how some high schools in Shanghai, China have been successful in cultivating in their students healthy personalities and strong characters, so as to produce a generation of young people who are ready to contribute to their society. The presentation will include a variety of ways in which to apply technology to create this beneficial learning environment, which will not only enhance students' learning of basic knowledge and skills within subject areas, but also to enrich their self awareness and capability to strive for success.

The Impact of a Technological Learning Environment on Character Education of the Younger Generation is significant. Discussions centered on character education, spiritual growth, and moral development continue to punctuate the educational landscape. Indeed, throughout history, the question of how the environment impacts each child's growth has always been an important issue among the educators. From the ancient Chinese philosopher, Confucius, to modern educators in China and all over the world has been the belief that the environment makes children who they are when they grow up. Chinese folk wisdom says that children living near the sea learn how to fish, whereas those living in the mountains learn how to gather logs for fire. In recent years, those schools able to afford the costs are building an environment in which modern technology reinforces teaching and learning, and therefore provides a measurable contribution to character education.

The Internet learning environment provides limitless opportunities for students to access useful and interesting information, and encourages them to search for and discover the unknown. While still relatively new, the Internet has long since outgrown its novelty, and is now seen as a crucial tool for fast access of timely information. Navigation through the World Wide Web is facilitated through search engines connected with each other making available vast amounts of highly focused information, especially when used through effective keyword searches.

In Shanghai, at QiBao High School, a private school, there are three laboratories with a total of 168 computers with full access to the Internet. In addition, there is an electronic reading room in the library and networked computers in each classroom. All the science labs and school offices are networked with LAN (Local Area Network) and WAN (wide area network). This well-planned electronic infrastructure provides students with opportunities to access the Internet whenever necessary to search for new information, to discover new solutions to problems, or to communicate with someone in another other part of the world. Indeed, for students at this high school, utilizing networked technology has become part of their daily lives.

In 1999, Qibao High School students were given an opportunity to develop an open-ended theme-study unit. Students were divided into 72 project groups, and utilized the Internet not only to select their themes but also to search out the necessary information and to determine effective modes of approach to solve the problems. This special project and the students' learning experiences were recognized by the city government to serve as a model and high schools across the country have been encouraged to follow this model.

Multimedia learning environments and a variety of computer software has enhanced students' interest both in science and in the humanities. When placed in this active learning environment, these students show a heightened interest in their coursework, even in the traditional science and humanities courses that have often had difficulty in cultivating student interest. The curious mind and the desire to discover have led to great scientific inventions and truth, as well as providing greater insights into our own humanity. It is our conviction that making full use of the

information-technology environment, as a catalyst for promoting students' characters is one of the important strategies.

Jianping High School in Shanghai has more than ten teaching laboratories, and the school administration requires all teachers to utilize at least two computer software packages in their teaching every semester. Qibao High School has hosted five multimedia technology workshops that provided training for more than 200 teachers. In addition, it held four contests for multimedia projects; some of the resulting multimedia teaching tools were impressive enough to have been published by Baida Electronic Publishing House.

Distance-learning and online courses make it possible to create a student-centered learning environment, therefore enhancing the production of personnel with creativity. The student-centered teaching model utilizes situational learning, collaboration, and communication, all of which help to encourage students' creativity and then to flesh out this creativity in real-world situations. In this environment, students are actively constructing their knowledge through multimedia technology, while teachers are the organizers, the facilitators, and promoters. This is the model that will produce the next generation who can meet the challenges in a world whose technical and social landscape is changing at an ever-increasing rate.

A learning environment that applies computer-aided instruction (CAI) can also train students for high-level thinking. Internet and multimedia learning environments provide opportunities for students to research and discover. Students are an active part of the learning process. CAI also provides situational learning in which students search the problematic situation, form the problem, and derive their own solutions. Therefore, students have the practice to recognize how the relevant phenomena and workable strategies finally lead to problem solving.

Information technology utilized in the classroom brings a variety of rich cultures from all over the world into a virtual global village and provides opportunities for creating a new culture, one that enhances each student's ability to analyze and critique. Internet and multimedia environments have already helped to create this culture that nurtures the students in their ability to analyze, make connections between classroom learning and real world applications, to construct their own knowledge, and to think critically.

The open learning atmosphere invites students to participate in interactive networked learning activities and therefore to develop and turn students from having a mere presence in a society to having the ability to serve the society. The use of instructional technology can help students in their training of high level thinking, therefore encourage them to have healthy personality and characters. The use of instructional technology can increase students' desire for learning and therefore enrich their experience in discovery. The use of instructional technology can widen students' view of knowing, therefore help them to build a solid foundation for basic knowledge and skills. The use of instructional technology can help raise students' abilities in abstract thinking, analyzing facts into constituent parts and synthesizing diverse knowledge into a coherent whole. The use of instructional technology can provide new opportunities for students to practice their skills in experimenting with new concepts. The use of instructional technology can train students to be self-regulated learners.

Technology in Early Childhood: A Model for Teacher Training

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Abstract: Changing perspectives for the use of technology in early childhood education lack explicit standards, based on a sound theoretical and empirical foundation, to generate changes in teacher practice and student learning. Funded by the university system and working in partnership with PK-16 area school districts and community-based childcare centers, this project developed technology standards for young children and the teachers who work with them and used those standards to develop competencies that define what young children and their teachers need to know and be able to do. These competencies were then integrated into pre-service teacher coursework and piloted in a workshop series offered at a local childcare center. The data collected from this pilot is now being used to develop a workshop series for early childhood professionals in the region to be applied collaboratively in early childhood settings. Anticipated outcomes include changes in teacher beliefs about and skills in technology, technology-enriched early childhood classrooms, more equitable access to technology for all young children, greater continuity between the preschool and elementary years, and enhanced student achievement.

Introduction

In partnership with local childcare centers, public school districts, Head Start programs, and neighborhood family resource centers, the UW-Green Bay Professional Program in Education was awarded a 3-year grant for the development of an on-site Early Childhood Teacher Preparation Program that matches program competencies with PK-12 school and community needs in a collaboratively supported, community-based model. Students now engage in performance-based learning in community-based early childhood settings with culturally, linguistically, and ability-diverse young children and their families. They receive mentoring support from master teachers, accessing course content through WebCT core modules. The project created an innovative response to the national call to reform teacher preparation and additionally provided an opportunity to improve student achievement by recognizing that quality child care is and must be a part of a system of learning that impacts child development. UW-Green Bay Early Childhood Program course content has been converted into clearly defined competencies. These competencies are now being cross-referenced with the high standards developed by the state of Wisconsin and early childhood professional organizations, and adapted to respond to the diverse and changing needs of the young children and their families in the community.

Missing from this process were technological standards from which to develop competencies in the area of technology in early childhood curriculum. The use of technology with young children and in early childhood settings has been controversial, with strong concerns being expressed about whether it is developmentally-appropriate and compatible with the learning needs and styles of young children. However, previously held beliefs about the limited abilities of very young children are now being challenged, and current research on young children and technology reports that integrated technology activities can increase student learning and achievement. Children from earliest infancy are reported to form categories (Gelman, 1996) and encode concepts in the form of 9 new words per day by 18 months of age (Carey, 1978). They are also reported to use

those categories to extend knowledge (Carey, 1985). Computer activities have been shown to enhance the development of these early cognitive competencies when they integrated into the curriculum, *and* coupled with relevant off-computer activities. Cognitive gains in significantly more areas are reported (Haugland, 1992). How young children are asked to use software also affects the development of their conceptual skills (Clements & Natasi, 1993). Outcomes are more positive when they are assigned open-ended tasks or projects requiring problem-solving rather than left to explore freely (Lemerise, 1993). Socially, young children are reported to spend nine times as much time talking to peers during computer time than when doing puzzles (Muller & Perlmutter, 1985), spend 95% of that talking time discussing the work (Genishi, et al., 1985), and exhibit greater peer teaching and helping when using computers (Clements & Natasi, 1992). Computers appear to serve as catalysts for social interaction rather than isolating children, as once believed. To be effective, young children need to learn to use technology in new ways - for exploration, creative problem solving, and self-guided instruction –and the teachers who work with them need the knowledge and skills to effectively integrate technology into the curriculum and use it to support social interaction.

Access to technology is also poor in early childhood settings and for the diverse families they serve. It is reported (Coley et al., 1997) that children attending low-income and high-minority schools have less access to most types of technology. With technology now permeating learning at all levels and in all areas of development, standards in the area of technology at the early childhood level and their application in the early childhood curriculum are critical to establish quality and continuity between the early childhood and elementary years and address issues of equitable access. While acknowledging and respecting differences, *all* young children need exposure to a common body of knowledge and skill that includes technology so they can be challenged to reach their full potential.

In response to these needs, this project identified standards and competencies for the children and for the teachers who work with them that recognized that the appropriate use of technology differs for preschool age children. Additionally, opportunities were provided or are being developed for teachers to gain the knowledge, and develop and apply the skills and positive attitudes needed to create technology-enriched early childhood classrooms in developmentally-appropriate ways and share that with the diverse families they serve.

The Project

The collaborative development and implementation of a competency, performance, and technology-enhanced early childhood teacher preparation program and the existence of a strong University/community partnership for the improvement of student learning, provided a strong and innovative collaborative base in which to identify and implement these missing standards in technology. The following project goals and activities drove the design and implementation of the model:

GOAL 1: This project will develop appropriate educational technology standards for young children and for those who teach them, based on the premise that the appropriate use of technology differs for preschool age children.

The development of these standards was guided by a Developing a Curriculum (DACUM) process. A workgroup was identified to select participants for the DACUM and gather existing research/ resources to support the process.

Fourteen early childhood and technology professionals from across the state gathered to identify what preschool children should know and be able to do with technology before they enter elementary school AND what teachers should know and be able to do with technology in early childhood settings. The end-product of the DACUM workshop was a chart listing essential job duties and tasks of teachers working with young children in the area of technology. Before conversion into outcome/competency statements, it was important to have consensus on the views of those in the early childhood and technology professions from the region. To this end, we asked an additional 84 early childhood/technology professionals in the state to complete a verification survey to validate the importance and the frequency of use for each task identified by our panel of experts.

GOAL 2: Working in collaboration with teachers, librarians, and other experts from the community, the UW-Green Bay faculty will use the DACUM standards to identify competencies appropriate for integration into the early childhood minor coursework as well as activities requiring pre-service teachers to implement multimedia technology practices into early childhood classrooms and disseminate to parents.

Through a series of collaborative workgroups, the identified DACUM standards were translated into essential technology competencies for early childhood pre-service teacher mastery, cross-referenced to the National Association for the Education of Young Children (NAEYC), framed by the Wisconsin Department of Public Instruction performance-based licensure standards, and linked to Wisconsin's Model Academic Standards. They were then integrated into each early childhood course offering along with performance-based multimedia assessment projects for application in early childhood settings and with families of young children. The completed standards and assessments will become part of the Early Childhood Curriculum Core in fall 2001. In addition to providing essential competency development for pre-service teachers, this integration will provide collaborative support to early childhood cooperating teachers interested in and/or attempting to integrate technology into their curriculum and help disseminate the standards to more early childhood classroom teachers.

GOAL 3: Educators and other professionals working with young children will be provided an opportunity to become familiar with the standards, learn or improve their knowledge and skills in using technology to enhance curriculum with young children, and apply that knowledge in their work settings.

The development of a workshop series was the planned outcome for Goal 3. The original objectives within this goal and identified for the training included (a) developing proficiency in using the equipment, (b) selecting appropriate software, (c) facilitating the active use of technology in the classroom, (d) using technology to support socialization and language, integrating technology across the classroom curriculum, and (e) designing an integrated unit that incorporates technology. These objectives aligned with what was being identified and reported in the current research on the use of technology with young children .

To further inform the development and design of the workshop series, a pilot training was offered to a local childcare center. Staff members completed a technology proficiency survey (see Table 1) and were interviewed to determine individual and group skill levels and training needs. The information gathered from the interview process identified a number of variables common to most early childhood programs that had the potential to negatively influence the application and long-term maintenance of technology knowledge and skills. Resources for equipment and training costs, for example, were limited. With most staff lacking 4-year degrees and having limited proficiency in technology, it became apparent that all workshop objectives could not be met in one workshop series. In addition, the consistent integration of technology into early childhood classrooms would be challenging, given high staff turnover and staffing crisis issues.

The development of technological literacy emerged from the surveys and interviews as the primary need of early childhood providers, and a pilot training was designed that responded to the realities and constraints of preschool settings. At the request of the director and staff, trainings were scheduled once a week in the evening for 3 hours for a period of 5 months, for a total of 20 sessions or 60 hours. The primary goal was to disengage participants from their anxiety and empower and motivate them to comfortably engage young children in technology through questioning, exploration and risk-taking. Three components were identified: technological foundations and awareness building, identification of developmentally-appropriate applications, and application and evaluation. Time and resources required the integration of these 3 components within each session. The major focus of each session was on the development of a basic foundation in technological literacy – terminology, understanding how the equipment works, and how to use the equipment. Focus areas included (a) email, (b) the internet, (c) word processing, (d) spread sheets, (e) data entry, (f) data bases, (g) scanning, (h) desktop publishing , (i) file management, and (j) digital image acquisition, management, and manipulation. At the beginning of the first session, a ½ hour facilitated discussion on the meaning of developmentally-appropriate practice took place to provide a context for the technology knowledge and skills that were to be introduced. At the end of each session, participants were given an "application assignment" to use in their classrooms and asked to find (develop, create) additional developmentally-appropriate ways to use the skill(s) introduced that week. A "Sharing Back" took place at the beginning of all other sessions to perpetuate the

A standards-based Workshop Series is now being developed in collaboration with early childhood community professionals, UW-Green Bay faculty, and technology consultants from PK-16 schools. Data collected from the pilot training, the DACUM competencies, and the current research will all be used to design the training. Resources will not allow for 60 hours of training, as offered in the pilot, but will be more substantive than most early childhood professional development opportunities. With research reporting that less than 10 hours of in-service teacher training can have a negative effect (Ryan, 1993) and that hands-on experience and in-depth

exposure supports generalization and maintenance in the classroom (Wright, 1994), the decision has been made to have an "Opening Conference" of 6 hours followed by six 4-hour modules distributed over 3 months for a total of 30 hours of computer lab training. Program design, including module content and format, will be done collaboratively, and content modules will be selected based on the pilot results and designed to provide a basic foundation of technological literacy unique to the participants. Module formats will vary, but again include lecture/discussion, small group projects, demonstrations, and hands-on activities.

An initial cohort of 30-35 participants from early childhood programs will be recruited through the partnership to participate. Family daycare providers, center-based daycare staff, administrators, and Head Start and preschool program staff will be invited to attend together, to facilitate interaction among professionals and support a collaborative commitment to the process. Participants may register for 3 credits but they will complete an additional 15 hours of site-based application in fall 2001, culminating in a "Showcase Poster Session" in which teacher-developed units will be presented. All workshop offerings will be held in the daytime, and stipends will be available to hire substitutes for those working in childcare settings who register for the full 30-hour program.

Table 1 Pilot Survey

User Survery	No Skills	Beginner	Intermediate	Advanced
Basic Computer Operation	2	5	3	6
End-User Technology Terminology	8	5	3	0
Email Use (Send, Receive, Attach)	1	10	4	1
File Management (local and network)	5	8	3	0
Desktop Publishing	8	4	4	0
Internet (Effective information research)	1	11	3	1
Word Processing	0	6	6	4
Speadsheet	10	6	0	0
Database	12	4	0	0
Digital Imaging Acquistion, manipulation and management	9	6	1	0
Selecting appropriate software (early childhood)	5	10	1	0
(Technology Integration) Facilitating the use of technology within the classroom	8	8	0	0
(Technology Integration) Designing integrated instructional units	14	2	0	0
(Technology Integration) Supporting socialization and language	12	4	0	0
Integration of technology across the curriculum	12	2	2	0

GOAL 4: The results, both product and process, will be disseminated to a wide array of early childhood professionals to use as resources to support the further development of technology-enriched early childhood classrooms.

Project outcomes will be shared with early childhood professionals in a variety of ways at the local, state and national level to support the generalization and maintenance of the technology knowledge, skills and attitudes developed in this project. The final "Showcase Poster Session" will provide workshop participants an

opportunity to share the results of their multimedia projects with UW-Green Bay faculty and invited professionals from throughout the region, including the 62 school districts who are participants in the UW-Green Bay Institute for Teaching and Learning Partnership. Workshop participants and pre-service teachers will also be asked to share the standards with the parents of the young children they work with in ways that respond to the diverse characteristics of those families.

Dissemination to a wider audience is or has taken place through presentations at various local, state and national conferences by UW-Green Bay faculty and interested workshop participants, and the development and maintenance of a worldwide web site of project activities linked to the UW-system is in progress. The Workshop Series will be self-sustaining and continue to be offered for credit through UW-Green Outreach and Extension., the website updated on a continuing basis, and the competencies taught within the Education Program Sequence. Funding support to purchase equipment for early childhood settings continues to be sought from business organizations in the community.

Assessment

Throughout the project, both formative and summative evaluation data is being gathered. Following completion of the DACUM, a statewide survey was sent to 80-100 early childhood professionals for verification of the validity of each standard generated. Those statistics are now being analyzed to determine which standards match what is presently working for teachers in classrooms and what is of interest to and being mastered by the young children in those classrooms. A second verification will be done by the workshop participants at the completion of the series and comparisons made.

Pre and post assessment measures were administered to participants in the pilot training. Similar pre and post measures will be designed and administered to workshop participants for each workshop module and at the completion of the series. Changes in knowledge, attitude, and perceived level of competency will be identified and analyzed to determine if there are significant differences that can be attributed to the pilot training and to the workshop training. The data will also be analyzed to determine if there are significant differences in knowledge, attitude and perceived level of competency between those who received 60 hours of training (pilot training) and those who received 30-45 hours of training (workshop training). Teacher-developed performance assessments with rubrics will be used in the analysis of the Thematic Units developed by workshop participants taking the series for credit. Workshop participants will also be asked to help design an assessment tool to measure the level of technological proficiency of each of the young children in their classrooms. This assessment tool will be administered at the beginning and end of the workshop series to determine changes in level of proficiency for each technology standard for young children.

The competencies selected for inclusion in the early childhood program sequence will be validated against Wisconsin's Academic Standards in the content area of technology for the first grade. Performance-based assessments, with rubrics, will be developed for each identified competency, and measures of change in the level of proficiency for pre-service teachers, cooperating teachers, and students will be identified.

Conclusions

The completion of an initial pilot training was critical in identifying the unique needs of the population for whom this workshop series was to be designed – early childhood providers. Information gathered in the interview process identified numerous constraints specific to early childhood care and education that needed to be taken into consideration when designing the workshop series. Results from the pilot study clearly supported modifying the original workshop series goal and objectives. Initially the series was to be designed to share DACUM generated standards, improve professional's knowledge and skills in applying these technology standards to enhance curriculum with young children, and support application of that knowledge in work settings. It became clear that the overriding goal of this initial workshop series was to establish a basic foundation of technological literacy unique to each participant's personal motivation, ability level, and learning curve. Without establishing this beginning skill and comfort level, learning would not generalize in a sustained way to the work setting. Participants need to first feel confident that they understand how the equipment works, what the terminology is, and how to use it to develop "technology products." Additionally, they need to be able

to compare, apply and evaluate their technology products within the context of developmentally-appropriate practice.

Training in basic technology literacy needs to be repeated regularly to address issues staff turnover and maintenance, and additional workshop trainings need to relate these newly learned skills to developmentally-appropriate application within a curriculum framework. The designing of integrated units that incorporate technology, the facilitation of the active use of technology in the classroom in ways that support socialization and language development, and the adaptation of technology to meet the needs of diverse learners cannot be presented until basic technology literacy is in place. These additional trainings will be essential if we are to succeed in providing early childhood professionals with the knowledge, skills and attitudes needed to successfully integrate technology into early childhood daycare and preschool settings.

References

Carey, S. (1978). The child as word learner. In J. Bresnan, G. Miller, & M. Halle (Ed.) *Linguistic theory and psychological reality* (264-293), Cambridge, MA: MIT Press.

Carey, S. (1985). *Conceptual change in childhood*. Cambridge, MA: MIT Press.

Clements, D.H., & Nastasi, B. K. (1992). Computers and early childhood education. In M. Gettinger, S.N. Elliott, & T.R. Kratochwill (Ed.) *Advances in school psychology: Preschool and early childhood treatment directions* (pp. 187-246), NJ: Lawrence Erlbaum Associates.

Clements, D.H., & Nastasi, B.K. (1993). Electronic media and early childhood education. In B. Spodek (Ed.) *Handbook of research on the education of young children* (pp. 251-275), New York: Macmillan.

Coley, R.J., Cradler, J., & Engel, P.K. (1997). *Computers and classrooms: The status of technology in U.S. schools*. Princeton, NJ: Educational Testing Service.

Gelman, S.A. (1996). Concepts and theories. In R. Gelman & T.K. Au (Eds.) *Perceptual and cognitive development*, New York: Academic Press.

Genishi, C., McCollum, P., & Strand, E.B. (1985). Research currents: The interactional richness of children's computer use. *Language Arts*, 62 (5): 526-532.

Haugland, S.W. (1992). Effects of computer software on preschool children's developmental gains. *Journal of Computing in Childhood Education*, 3 (1): 15-30.

Lemerise, T. (1993). Piaget, Vygotsky, & Logo. *The Computing Teacher*, 24-28.

Mulller, A.A., & Perlmutter, M. (1985). Preschool children's problem-solving interactions at computers and jigsaw puzzles. *Journal of Applied Developmental Psychology*, 6: 173-186.

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Lights, Camera, Action: Videoconferencing in Kindergarten

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Abstract: This paper explains a kindergarten project that uses multiple technologies, culminating in daily videoconferencing with another kindergarten. This project took place at a university laboratory school as a demonstration of appropriate use of technology, including videoconferencing, for preservice teachers. As the students prepared for the daily videoconferences, they were engaged in dramatic play, Internet activities, and a field trip to a television station. The project proved to be an exciting experience for the children, extending their understanding of technology and the world.

Introduction

As more and more technology is being included into early childhood program, we continue to struggle what is the most appropriate ways to use it with these young children. A simple search of the archives for the ECEOL Listserv (http://lists.maine.edu/archives/eceol-l.html) will show many conversations over the last several years about whether computers should or should not be included in early childhood classrooms. There are concerns about implementing the use of technology in classrooms that lack basic equipment and materials, is this the best use of monetary resources to benefit the children? The NAEYC position paper about technology and young children (NAEYC, 1999) talks of the balance that is necessary. The paper goes on to suggest ways that technology can be used to support children and allow them the opportunity to explore and collaborate.

Being at a university related laboratory school affords me the opportunity to look at issues and curricular options. For several years, I have looked at ways to appropriately integrate technology into the traditional kindergarten program. This paper will share a series of activities that led up to a successful videoconference partnership with a colleague in Illinois, and her kindergarten children.

Setting the Stage

In January 2000, a colleague and I began looking at ways we could use desktop videoconferencing for our children to visit. I felt strongly that our interactions needed a purpose beyond just talking with each other. After several conversations, we decided to expand on the long-standing tradition of weather reporting in kindergarten classrooms. The project was to occur during the second half of our school year and the children were doing lots of graphing. Both classrooms already graphed the weather for their area, so we decided would expand on this and exchange weather reports between the classrooms. We would encourage the children to look for patterns in the weather between the two locations. We decided to begin in April. This gave me time to prepare the children for the upcoming project.

Kindergartners have trouble understanding the concept of time, and distance. They don't understand how it can be light in our region an dark else where. Likewise, they have difficulty understanding that not everyone experiences the same weather at the same time. We felt that this project would assist with this concept. As I prepared the children for the upcoming videoconference, I located a website with live webcams listed by state (http://cirrus.sprl.umich.edu/wxnet/wxcam.html). I added a

responsibility to the classroom meteorologist's daily duties. The meteorologist was to go to the computer before the group meeting, select a state they wanted to look at, and then locate a cam shot that they liked. This page was left up for the children to look at first as a group, then off and on during the morning. The children looked at a map to locate a state if they did not come with one in mind. If necessary I assisted the child in locating the state name on the web site, then left them to explore the different links available in that state. The kindergartners already knew how to navigate back and forth with the arrow buttons. Every day became a new adventure. Where would we go? What would we see?

With this web cam page, we went to Florida and watched a boat skipping over the water, looked at animals waking up in zoos, and watched many sunrises in the west. The children were fascinated with watching dawn coming over a town. They would locate a town covered in darkness, then continually go back an see how it was changing as our morning progressed. They began to understand that daytime in different areas was different from ours. The children also became interested in what else a meteorologist did.

Kindergarten on Tour

To assist with their familiarization with the responsibilities of a meteorologist, I arranged for the children to tour the university television studio, W-IUP. We are fortunate to have a studio located in the same building as our school, so the trip was very easy to do with the children. The university students leading the tour focused on the parts of the studio that were important to the weather person. The children saw the room with the television monitors and the computer mixers. Our tour guides explained how the blue scrim screen worked. We were able to look at the two monitors, one solid blue, the other with the image superimposed on it. We then moved into the studio.

The children explored their images on the monitors with the blue screen to their backs. Then they looked at the monitor where the Bambi movie now played instead of a weather map. They were able to attempt to pat Bambi or Thumper, with their backs to the screen, while looking at the monitors. The college students explained in appropriate terms about the cameras, teleprompter, and set. The children then were given time to explore the set and cameras. Taking turns being behind and before the cameras. The children loved climbing on the cameras, changing the angles and focus, and watching the monitor to see what they had done. On stage, the children were having a great time reporting the local news and weather. While all this was happening, the digital camera was being used to document the trip. These pictures were used to send home a note about our visit, as well as for the children to re-visit the studio.

The Re-enactment

Returning to the classroom, the dramatic play area became our own television studio. A long, low table was the set for the meteorologist. A Kodak desktop videoconferencing camera on a tripod attached to a computer became our version of the large cameras and production room. Two children operated the program on the computer, one child operated the camera, and one or two children were onscreen. A television was placed in the weather station, tuned to the weather station for the children to listen to and watch the meteorologists. Children decided to print the Yahoo weather site to use as a "script" in their studio. The children played for weeks taking turns being the meteorologist, the camera operator, and the production person operating the computer and making mini-movies to share with the class.

Show Time

The time finally arrived to begin videoconferencing with the other classroom. My children were very excited to see this new use of their camera. Because they were not familiar with how the camera worked on a tripod, the kindergartners took turns operating the camera for the daily conferences. The children began to immediately make connections with the other children, seeing similarities between individual children and their names. This excited them, an proved to further involve them in the project. The weather person from each school gave their weather report, and then we would visit. Sometimes the

children had questions, other times the teachers guided the conversation. In my room, we were doing daily graphing of a question. Several occasions we asked the other classroom to respond to our question. This gave my children a larger data source to work with. Our graphing question sometimes provoked questions in the other room that they researched later. As the school year moved on we shared many stories, answered many questions about each other, and even shared portions of special programs each class was preparing.

As the teacher, I was concerned with the time we were using to do the project. I sometimes had trouble rationalizing the time from other activities; my kindergarten is a three-hour a day program. We were videoconferencing daily for 10-20 minutes. This seemed like a large piece of my day and was it worth it? But with the questions the children asked, and the development in their understanding of the other children, I would and will do it again. On those occasions when we could not meet because of other commitments, the children always asked why we did not videoconference.

Conclusions

When we began videoconferencing, it was daily and continued for approximately 6 weeks. We had to overcome the dual platform issue with the cameras, by using CUSeeMe software. The project was very exciting for both the children and the teachers. While the picture was not the clearest, and the audio poor, the children were able to make discoveries about the weather and each other.

This project provided an excellent opportunity for my children to construct new understanding of weather in ways not available to them with out the technology. The children had opportunities to look at several types of technology, not just computers. What began as a simple exchange of the weather became an exciting interdisciplinary project combining math, science, social studies, literacy, and communication skills into an authentic and meaningful experience.

References

NAEYC, (1996). *Technology and Young Children -- Ages 3 through 8*, http://www.naeyc.org/resources/position_statements/pstech98.htm